Improving the Quality of Referrals Through Health IT

Kim-Hwang JE, Chen AH, Bell DS, et al. Evaluating electronic referrals for specialty care at a public hospital. J Gen Intern Med 2010;25:1123–8.

Study Overview

Objective. To evaluate the impact of a novel electronic referral system compared with paper-based referrals on specialty referrals.

Design. Pre- and postintervention comparison using a real-time encounter-based survey.

Setting and participants. The study took place at San Francisco General Hospital (SFGH), a public city and county hospital staffed by physicians affiliated with the University of California San Francisco. SFGH is the largest provider of specialty care for the uninsured and poor in the area. The SFGH system uses a hybrid electronic health record (EHR) and paper-based documentation system. Prior to the intervention, referrals were written and faxed or carried to the specialty clinic to be scheduled on a first-come, first-served basis.

Intervention. The electronic referral system (eReferral) is a web-based application integrated within the EHR. Users (starting with a primary care physicians initiating a referral) bring up an electronic form populated with patient clinical and demographic data. They then fill out a free text field describing the reason for consultation and other relevant information. A predetermined reviewer at the specialty clinic (physician specialist for medical specialties or nurse practitioner for surgical specialties) reviews the referrals and decides within 72 hours whether to schedule the appointment, and within what time frame. The reviewer can ask for further information from the referring physician, or suggest further evaluation or triage prior to the referral by communicating within the eReferral web portal, which is captured within the EHR. On the day of the specialty visit, the eReferral form is printed out at the time of the visit with the information captured to date. Specialty reviewers spent 1 to 6 hours a week on this process, and their time was paid for by a grant. Furthermore, specialists within this system are salaried. The study examined the eReferral adoption process in 2007 and 2008 at the following specialty clinics: cardiology, pulmonary, endocrine, rheumatology, neurosurgery, and orthopedics.

Main outcome measures. The investigators developed a 6-item paper questionnaire given to specialists to assess the appropriateness of each specialty visit and the adequacy of the pre-visit work up and clinical information available. Different time periods for questionnaire distribution were chosen so the approximately half the sessions surveyed would include paper-based referrals, and the other half electronic referrals. The study participants did not know the purpose or rationale for the study, and were not asked identifying information beyond their level of training. Specialty clinicians were asked to leave completed questionnaires in an envelope at the conclusion of each session. The investigators asked the first clinician who saw a new patient during these sessions to fill out of the questionnaire, but excluded responses from medical students. The

Outcomes Research in Review SECTION EDITORS

Ashish K. Jha, MD, MPH
Brigham and Women's Hospital
Boston, MA

Ula Hwang, MD, MPH
Mount Sinai School of Medicine
New York, NY

Jason P. Block, MD, MPH
Brigham and Women's Hospital
Boston, MA

Maya Vijayaraghavan, MD
University of California, San Francisco
San Francisco, CA

William Hung, MD, MPH
Mount Sinai School of Medicine
New York, NY

Asaf Bitton, MD, MPH
Brigham and Women's Hospital
Boston, MA

Melanie Jay, MD, MS
NYU School of Medicine
New York, NY

questionnaire asked the respondents to assess the difficulty of identifying the consultation, the appropriateness of the referral, and whether they would recommend a follow up visit for the patient. If they recommended a follow-up visit, they were asked if that visit could have been avoided with a more complete workup prior to the visit.

Main results. The investigators collected a total of 540 questionnaires, 335 from medical specialties, with the rest from surgical specialties. They analyzed 505 questionnaires, excluding 35 filled out by medical students. Respondents reported difficulty in identifying the reason for referral at 19.8% of medical and 38.0% of surgical visits using paper-based methods compared with 11.0% and 9.5% of visits using eReferral ($P = 0.03$ and < 0.001). Regarding appropriateness, 6.4% and 9.8% of medical and surgical referrals using paper methods compared with 2.6% and 2.1% using eReferral were deemed not completely appropriate ($P = 0.21$ and 0.03). Specialists requested a follow-up visit for 82.4% and 76.2% of medical and surgical patients with paper-based referrals compared with 90.1% and 58.1% of eReferrals ($P = 0.06$ and 0.01). Respondents considered a follow up visits avoidable for 32.4% and 44.7% of medical and surgical follow-ups with paper-based methods compared with 27.5% and 13.5% with eReferral ($P = 0.41$ and < 0.001).

Conclusion. An electronic system to facilitate a standardized specialty referral process improved pre-visit communication and the appropriateness of referral visits within a public hospital system.

Commentary

Each year in the United States, over a third of patients are referred to a specialist, and specialist visits account for more than half of all outpatient visits [1]. Despite the large volume of visits, wide availability of specialists in the United States (the majority of physicians are specialists), and the importance of the referrals, major deficiencies and inefficiencies exist in the process [1]. Wide variations in primary care physicians' (PCPs') threshold to refer result in over- and under-referral for key conditions. Numerous studies show that the transfer of information between primary and specialty care upon referral is unavailable, and when present, often contains inadequate data to understand the reason for referral [1]. Communication back from specialists to primary care is also inadequate.

This study sought to determine whether the implementation of an electronic referral system within a public hospital network would improve the appropriateness of referrals and quality of the pre-visit workup. The investigators found that the proportion of referrals deemed inappropriate was cut by half, and avoidable follow-up visits were reduced as well. Further work by this research group found that wait time for nonurgent visits declined in 7 of 8 clinics by up to 90% in the first 6 months of use, and expedited visits increased [2]. They also surveyed their network PCPs, who reported that specialists offered better pre-referral visit guidance and were more effective at addressing the referral question after implementation of eReferral [3].

While the findings of this study are intriguing, a number of limitations exist. The design was a simple pre/post study without controls. Thus, causal inference is limited and temporal confounding could play a role in the findings. Furthermore, the analysis did not adjust for clustering or identify physician level factors that might influence the variation in responses. The specialty ratings of the referral quality were subjective and not linked to verified criteria. Finally, the largest limitation may be one of generalizability. The physicians in this system were salaried, and thus not tied to fee-for-service productivity incentives like most specialists. Moreover, the specialist reviewer time was paid for by a grant. Finally, the EHR was fairly well-developed and integrated across the system. These 3 factors (salary, time for referral review, and integrated EHR) are not commonly found in the usual fragmented networks of care across the United States. But they do point to the advantages of integration and incentive alignment in improving key processes such as specialist referral.

Applications for Clinical Practice

Clear deficiencies exist in most specialty referral processes. A novel eReferral system in San Francisco leveraged existing EHR platforms and network alignment to significantly improve the referral process from both specialist and primary care perspectives. These types of referral process improvements hold the potential to expand and better link the "medical neighborhood" around existing primary care practices or medical homes [4], a first step to forming more accountable systems of care.

—Review by Asaf Bitton, MD, MPH

References

1. Mehrotra A, Forrest CB, Lin CY. Dropping the baton: specialty referrals in the United States. Milbank Q 2011;89:39–68.
2. Chen AH, Kushel MB, Grumbach K, Yee HF Jr. Practice profile. A safety-net system gains efficiencies through 'eReferrals' to specialists. Health Aff (Millwood). 2010;29:969–71.
3. Kim Y, Chen AH, Keith E, et al. Not perfect, but better: primary care providers' experiences with electronic referrals in a safety net health system. J Gen Intern Med 2009;24:614–9.
4. Bitton A. Who is on the home team? Redefining the relationship between primary and specialty care in the patient-centered medical home. Med Care 2011;49:1–3.

Copyright 2011 by Turner White Communications Inc., Wayne, PA. All rights reserved.